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Bittacus livingstonei, a new species from Malaŵi (Mecoptera: Bittacidae)

by

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SYNOPSIS

A new species, *Bittacus livingstonei*, is described from material collected in Malaŵi. This species is compared with *B. montanus* Weele and *B. rossi* Londt, two very similar species. New records and a list of the species known from Malaŵi is given.

During a recent collecting expedition to Malaŵi, undertaken by Dr Brian Stuckenberg, his son David and I, thirty-four *Bittacus* specimens were collected. This paper deals with this material and seventeen specimens kindly loaned to me by Dr Cornell Dudley of the Chancellor College, Zomba (CCZ).

Bittacus livingstonei sp. n. Figs 1–2, 4–12

Derivation: Named after the famous explorer David Livingstone whose early expeditions did so much toward the development of Malaŵi as a nation.

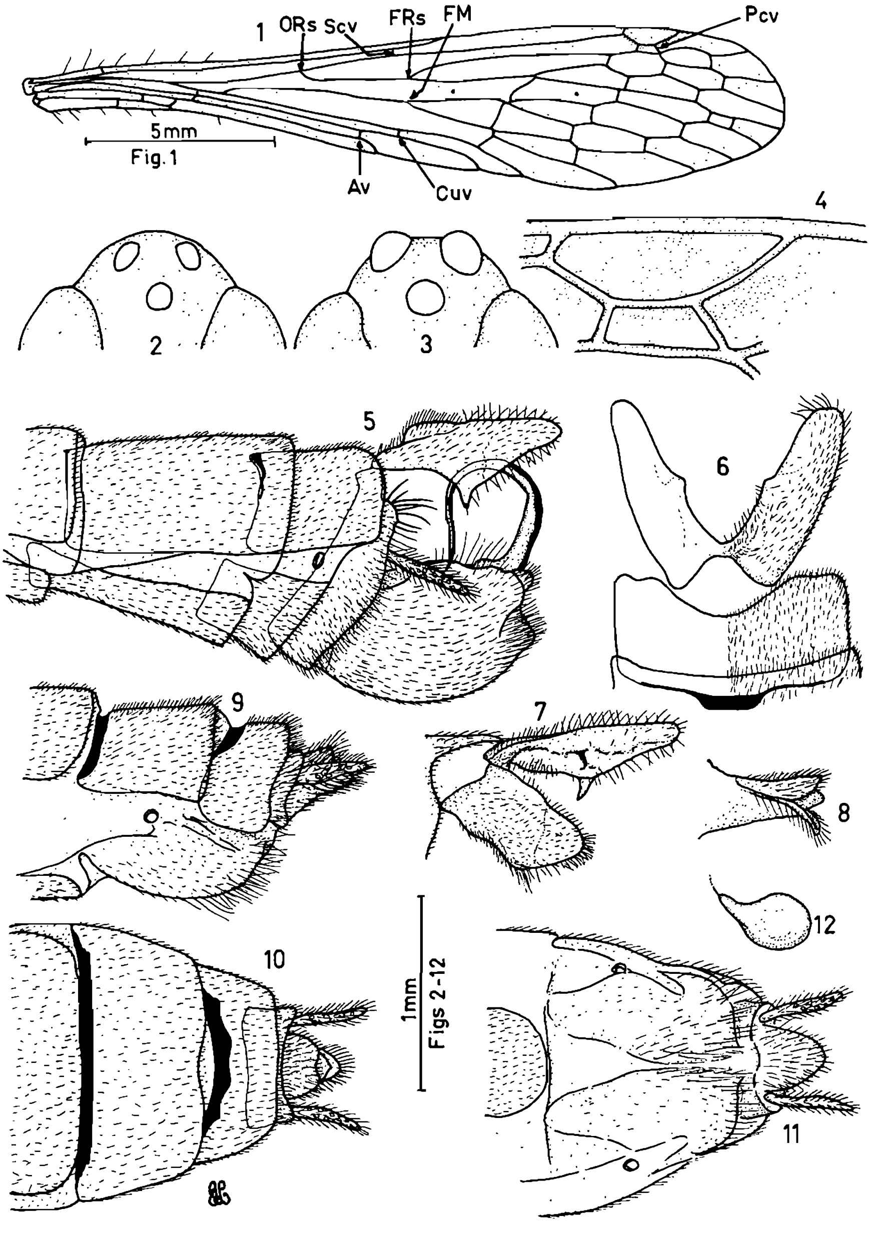
Description: Based on ♂ holotype.

Head: Uniform yellow-brown; palpi slightly darker; ocelli small (not projecting above head margin in anterior view—Fig. 2) enclosed in a dark red-brown spot. Antennae yellow-brown proximally but distal segments appear dark brown.

Thorax: Uniform yellow-brown, without any distinctive markings. Legs uniform yellow-brown, tips of femora and other segments not darker than other parts. Wings: Length forewing (FW) 18,1 mm, hindwing (HW) 16,2 mm. Venation unremarkable (Fig. 1); pterostigma (Fig. 4) approximately three times as long as broad; 2 Pcv (pterostigmal crossveins) in all four wings; 1 Scv (subcostal crossvein) in all wings, occurs beyond halfway between ORs (origin of radial sector) and FRs (fork of radial sector) in forewing, at halfway or before in hindwing; FM (fork of media) lies a little proximal or in line with an imaginary line drawn through FRs and Cuv (cubital crossvein); Av (apical crossvein) present except in right hindwing.

Abdomen: Uniform yellow-brown; ♂ genitalia as Figs 5–8 (paratype illustrated). Short black antecostae and pheromone glands present; epiandrial lobes (claspers) with a strong ventrally directed tooth (Figs 5, 7); supra-anale and subanale short and normally developed (Fig. 8); aedeagus curved upward in an inverted U-shape (Fig. 5).

Paratypes: 6 ♂ 7 ♀ listed below. Agree well with holotype. Wing length: FW 16,9–19,0 mm (mean 17,8), HW 15,6–17,0 mm (mean 16,1 mm). Av may be



Figs 1–12. *Bittacus* species. 1–2. *B. livingstonei* sp. n. paratype 1. Wing (for abbreviations see text). 2. Head in anterior view showing ocelli. 3. *B. montanus* Weele, head showing ocelli. 4–12. *B. livingstonei* sp. n. paratypes. 4. Pterostigma. 5–8. male genitalia. 5. Lateral aspect. 6. Dorsal aspect. 7. Dorsolateral aspect of epiandrium. 8. Anal region. 9–12. Female genitalia. 9. Lateral aspect. 10. Dorsal aspect. 11. Ventral aspect. 12. Spermatheca.

absent in one hindwing of some specimens (in both hindwings in 1 ♂), otherwise Av is present. 1 ♀ has a single Pcv in the right hindwing. ♀ genitalia as Figs 9–12. Spermatheca subspherical with a well-developed rostrum (Fig. 12).

Material examined: MALAŴI: 1 ♂ holotype, 4 ♂ 7 ♀ paratypes, Ntchisi forest reserve, 1334Ac (grid reference), 1500 m, 3–4.xii.1980, Londt & Stuckenberg, montane forest. 1 ♂ paratype, Viphya Mtns., Chikangawa, 1133Dd, 1700 m, 5–8.xii.1980, Stuckenberg & Londt, forest undergrowth. Holotype, 3 ♂ 5 ♀ paratypes in Natal Museum (NM 2476), pairs of paratypes deposited in Snow Entomological Museum, Kansas (SEM) and British Museum (Natural History) respectively. 1 ♂, paratype, Nyika national park, Chowe forest, 2.i.1981, C. O. Dudley (CCZ).

Habitat: *B. livingstonei* inhabits vegetation on the floor of montane forest patches. Such forest patches occur at altitudes of about 1500 m or more in Malaŵi.

Relationship: *B. livingstonei* closely resembles both *B. montanus* Weele, 1909 and *B. rossi* Londt, 1977 (both illustrated by Londt, 1977) especially with respect to male and female genitalia. *B. montanus* has been shown to demonstrate considerable variation in the shape of the male epiandrium (in particular) and as this structure is usually very important in the characterisation of species it could be foolhardy to describe another species as new when it resembles *montanus* as closely as does *livingstonei.* I do, however, believe that *livingstonei* is a distinct species on the basis of the following comments. *B. livingstonei* more closely resembles *montanus* with respect to male genitalia in that the tips of the claspers are quite acute, whereas these tips are broadly rounded in *rossi.* On the other hand *livingstonei* possesses a short pterostigma similar to that of *rossi* and quite unlike the longer, narrower condition found in *montanus.* Both *montanus* and *rossi* possess dark-tipped femora (and other leg segments), whereas *livingstonei* has unicolourous legs, a feature which immediately separates it from the other two species. The development of the ocelli in these three species may prove of value in their characterisation. *B. montanus* has large, prominent ocelli (Fig. 3) while *livingstonei* has much smaller ocelli (Fig. 2). Unfortunately I did not record the condition of the ocelli in *rossi*, so for the present this feature has limited value. The habitat preference of *montanus* is open grassland or *Brachystegia* woodland and so *livingstonei* is clearly different in that it lives in montane forest situations. Again nothing can be said about the habitat preference of *rossi* as the single specimen known was taken at light.

New records of *Bittacus* from Malaŵi

Bittacus stanleyi Byers, 1969

5 ♂ 3 ♀, Zomba plateau, 1500 m, 24–27.xi.1980, Stuckenberg & Londt (NM, SEM); 1 ♀, Ntchisi forest reserve, 1500 m, 3–4.xii.1980, Londt & Stuckenberg (NM); 1 ♂. Mt. Soche, 30.xii.1972, C. O. Dudley (CCZ); 1 ♀, Mt. Soche, 13.i.1973, C. O. Dudley (CCZ); 1 defective, Mingoli forest, Zomba, xii.1978, C. O. Dudley (CCZ); 1 ♀, Liwonde national park, xii.1974, C. O. Dudley (CCZ).

A species inhabiting forest margins. Previously recorded only from Zaïre.

Bittacus weelei Esben-Petersen, 1913

1 ♂, Viphya Mtns., Chikangawa, 1700 m, 5–8.xii.1980, Stuckenberg & Londt (NM); 1 ♂ 2 ♀, Chimaliro forest reserve, 1200 m, 9.xii.1980, Stuckenberg & Londt (NM); 1 ♂, Maone Limbe, 5.xii.1972, C. O. Dudley (CCZ); 1 ♀, Mingoli forest, Zomba, xii.1978, C. O. Dudley (CCZ).

A species inhabiting open grassland and *Brachystegia* woodland.

Bittacus montanus Weele, 1909

2 ♂, Zomba plateau, 1500 m, 24–27.xi.1980, Stuckenberg & Londt (NM); 1 ♂, same locality, 13–14.xii.1980, Londt & Stuckenberg (NM); 5 ♂ 5 ♀, Viphya Mtns., Chikangawa, 1700 m, 5–8.xii.1980, Stuckenberg & Londt (NM, SEM); 2 ♂ 2 ♀, Chimaliro forest reserve, 1200 m, 9.xii.1980, Stuckenberg & Londt (NM); 1 ♂, Kasamba, xii.1974, C. O. Dudley (CCZ); 1 ♂ 2 ♀ 1 defective, Chikangawa, Viphya plateau, 5.i.1981, C. O. Dudley (CCZ); 1 ♂, Chowe forest, Nyika national park, 3.i.1981, C. O. Dudley (CCZ).

A species inhabiting open grassland and *Brachystegia* woodland.

Bittacus tuxeni Byers, 1975

2 ♂ 1 defective, Nyika national park, Chilinda, at light, 31.xii.1980, C. O. Dudley (CCZ, NM).

A remarkable new record as this species was previously known only from Guinea. The habits are not known but Dr Dudley informs me that the specimens were taken in a light trap set up near a plantation.

Bittacus sp.

1 ♂ , Kasungu national park, at light, 29.xii.1980, C. O. Dudley (NM). This specimen, which has slightly damaged genitalia, appears to be a new species. I am unwilling to describe it on a single damaged specimen.

At the present time eight described species are known from Malaŵi: *B. fumosus* Esben-Petersen, 1913; *B. moschinus* Navás, 1914; *B. zambezinus* Navás, 1931 and the five species already listed in this paper. Additional information on the Malaŵian *Bittacus* is published elsewhere (Londt, 1981).

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